FCC 75-1248

BEFORE THE

FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON, D.C. 20554

Docket No. 19528

In the Matter of

PROPOSALS FOR NEW OR REVISED CLASSES OF INTERSTATE AND FOREIGN MESSAGE TOLL TELEPHONE SERVICE (MTS) AND WIDE AREA TELEPHONE SERVICE (WATS)

First Report and Order

(Adopted October 31, 1975; Released November 7, 1975)

BY THE COMMISSION: COMMISSIONER REID ABSENT; COMMISSIONERS HOOKS AND ROBINSON CONCURRING AND ISSUING STATEMENTS.

PRELIMINARY STATEMENT

1. The Commission has under consideration the Recommended First Report and Order of the Federal-State Joint Board (Joint Board) in this matter, together with its recommendation that we also consider the General Order establishing the California registration program. We also have before us the comments concerning these proposals which we requested interested persons to file in our Memorandum Opinion and Order released May 27, 1975 (53 FCC 2d 219).

2. Timely comments were filed by Ad Hoc Telecommunications Committee, Adcor Electronics, Inc., American Petroleum Institute, American Telephone and Telegraph Company (AT&T), Association of American Railroads, Association of Data Processing Service Organizations, California Public Utilities Commission, Communication Certification Laboratory, Computer and Business Equipment Manufacturer's Association, Continental Telephone Corporation, DASA Corporation, Dictaphone Corporation, Electronic Industries Association, Executone Communica-

tion Systems, The GTE Companies, Independent Data Communications Manufacturers Association, International Business Machines, National Telephone Cooperative Association, National Retail Merchant's Association, North American Telephone Association, North Carolina Utilities Commission, Office of Consumer Affairs by Virginia H. Knauer, Phonetele, Inc., Public Utilities Commission of Ohio, Rochester Telephone Company, Rollings Protective Service Company, Scott-Buttner Communications, Sentry Technology, Inc., T.A.D. Avanti, Inc., United States Department of Justice, United States Independent Telephone Association, and Utilities Telecommunications Council. In addition we have received approximately two hundred letters addressing this subject.

3. We also received Reply Comments filed by Phone Mate, Inc., an Opposition to the Reply Comments of Phone Mate, Inc. filed by AT&T, a Petition for Leave to File Further Comments and Further Comments filed by the Ohio Public Utilities Commission, Motion for Acceptance of Late Filing and Comments of New York Public Service Commission, Supplemental Comments filed by the Computer and Business Equipment Manufacturer's Association, and Supplemental Comments filed by International Business Machines. While we only provided for the filing of comments in our Memorandum Opinion and Order, *supra*, and made no provision for the filing of any further comments, we believe the subject before us to be of such significance that we have accepted such late filed comments and further comments to assist us in determining our course of action.

4. GTE Service Corporation has filed a motion requesting that the Commission establish certain additional procedural dates or meetings for the purpose of obtaining comments on AT&T's Authorized Protective Connecting Module program. Continental Telephone Corporation filed Comments supporting this motion. AT&T has also filed a motion requesting us to institute further proceedings to

explore the option of allowing connection of terminal equipment through discrete protective modules. In view of the action we are taking herein, we perceive no necessity for the procedures or meetings GTE Service Corporation and AT&T have requested, since in accordance with our Memorandum Opinion and Order released November 5, 1974, 49 FCC 2d 580, we have considered AT&T's Authorized Protective Connecting Module program within the context of Docket No. 19528. In this regard we also believe the record in this matter suffices for our deliberations and that oral argument is neither necessary nor helpful in this matter.

5. The Commission also has pending before it (1) a Petition filed December 27, 1973, by the North American Telephone Association For Amendment of Procedures, Issuance of a Notice of Proposed Rule Making and Establishment of Interim Procedures relative to the interconnection of customer-provided terminal communication equipment and systems and (2) a Motion filed September 26, 1974, by the Computer and Business Equipment Manufacturers Association for Separation of Issues and for an Order Authorizing a Program of Direct Interconnection of Customer Owned Data Terminal Equipment and Ancillary Telephone Equipment. In view of the action we are taking herein, we will dismiss these pleadings as moot.

BACKGROUND

6. This Commission and the courts have consistently enunciated the subscriber's right to make beneficial use of an interconnected device or communications system without causing harm to a telephone company's operations. On remand in *Hush-A-Phone*,[1] the Commission enunciated the following broad principle of law and policy:

In addition to invalidating the defendants foreign

[1] *Hush-A-Phone Corp.* v. *U.S.*, 99 U.S. App. D.C. 190, 238, F. 2d 266 (D.C. Cir. 1956).

attachment tariff regulations insofar as they bar the use of the Hush-A-Phone device, an inescapable consequence of the Court's opinion is to render such tariff regulations unjust and unreasonable *insofar as they may be construed or applied to bar a customer from using other devices which serve the customer's convenience in his use of the facilities furnished by the defendants and which do not injure the telephone companies' employees or facilities, or the public in the use of defendants' services, or impair the operation of the telephone system. As we construe the Court's opinion, a tariff regulation which amounts to a blanket prohibition against the customer's use of any and all devices without discriminating between the harmful and harmless encroaches upon the right of the user to make reasonable use of the facilities furnished by the defendants.* Such a regulation goes beyond what is reasonably required in the interest of protecting the defendants' employees, facilities, the telephone system and the public from adverse effects. (emphasis supplied) 22 FCC 112, 113-114 (1957)

7. Relying on the holding *Hush-A-Phone, supra,* we found in *Carterfone*[2] that a device used to interconnect mobile radio systems to the interstate and foreign message telecommunications system filled a need, that its use did not adversely affect the telephone system, and that the AT&T tariff prohibiting its use was unreasonable and unlawful within the meaning of Section 201(b) of the Communications Act of 1934. In making it clear that our *Carterfone* decision was not limited to the Carterfone device *per se,* but was rather a broad general policy, we stated:

In view of the unlawfulness of the tariff there would be no point in merely declaring it invalid as applied to the Carterfone and permitting it to continue in

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[2] *Carterfone,* 13 FCC 2d 420 (1968), reconsideration denied, 14 FCC 2d 571 (1968).

operation as to other interconnection devices. This would also put a clearly improper burden upon the manufacturers and users of other devices. The appropriate remedy is to strike the tariff and permit the carriers, if they so desire, to propose new tariff provisions in accordance with this opinion. 13 F.C.C. 2d 420, 425

8. We further held that this broad *Carterfone* policy applied equally to devices which had direct electrical connections.[3] We noted that AT&T considered this to be a special category but had not clearly demonstrated the basis for this exception[4] (14 F.C.C. 2d 571, 573 (ftn. 4)), and went on to comment:

> The primary contention upon reconsideration is that our decision permits the use of a myriad of customer-provided devices for interconnection without adequate exploration of the technical and economic problems. This record convinces us that there can be interconnection without harmful technical effects. With respect to possible economic effects from the interconnection of private systems—"the piecing out of common carrier services with unregulated systems"—no substantial effort was made on this record to demonstrate any harm from the interconnection of private mobile radio systems, and we therefore had no occasion to address ourselves to that question. We agreed that economic effects upon the carriers' rate structure might well be a public interest question. But it is an issue, if a carrier seeks to raise it, to be decided upon the facts, i.e., will there be a "cream skimming" effect, what will be the extent of it, and how does it weigh against the benefits of interconnection. *As is the case with the question of technical harm, a tariff is unreasonable if*

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[3] *See ITT* v. *General Telephone and Electronics Corp.*, 518 F. 2d 913, 933 (9th Cir. 1975).

[4] *See Phonetele, Inc.* v. *California Public Utilities Commission*, 11 C. 3d 125, 520 P. 2d 400 (1974).

it assumes a priori a conclusion as to such an issue. (emphasis supplied) (footnotes omitted). 14 F.C.C. 2d 571, 572-573.

9. We did not prescribe the terms of the tariff revisions required to satisfy the *Carterfone* policy, but left that to the initiative of the telephone company. AT&T filed new and revised tariffs and subsequent amendments on behalf of itself and concerned interstate carriers, which allow the interconnection of customer-provided equipment (1) through the use of carrier-supplied connecting arrangements subject to certain technical requirements, and, if required, network control signalling units; (2) in accordance with a carrier-administered attestation program for headsets and non-powered conferencing devices; and (3) in accordance with a carrier-administered program for conforming answering devices.

10. The *Carterfone* Decision placed the burden of proof squarely upon the carriers—not the users or this Commission—to demonstrate that a particular unit or class of customer-provided equipment would cause either technical or economic harm to the telephone network, note 4, *supra;* this burden was to be met *prior* to the filing of a tariff restricting the use of such equipment. The information accompanying the tariff revisions filed pursuant to *Carterfone* did not demonstrate that the direct electrical connection of all customer-provided equipment would cause harm unless accomplished through the carrier-supplied connecting arrangements provided for in the tariff. At best, it simply reflected one manner in which to protect the network. It was not even argued that this protection was the minimum protection required or the most cost effective. Nevertheless, the Commission, exercising an abundance of caution in protecting the telephone network from any possible harm, allowed the tariffs to become effective without ruling explicitly on their lawfulness.[5]

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[5] ***AT&T "Foreign Attachment" Tariff Revisions,*** 15 FCC 2d 605 (1968), reconsideration denied, 18 FCC 2d 871 (1969).

11. At the same time, the Commission instituted informal proceedings to obtain technical and operational data to assist its evaluation of the public interest factors involved in liberalizing the network control signalling unit and connecting arrangement provisions of the revised tariffs. Contracts to study these possible revisions were issued to the National Academy of Sciences and Dittberner Associates, and their subsequent reports together with comments from interested parties indicated that consideration should be given to revisions in MTS and WATS offerings under a program that would protect the telephone network from four types of harm: (a) hazardous voltages; (b) excessive signal power levels; (c) improper network control signalling and (d) line imbalance. Thereafter, the Commission created two advisory committees, pursuant to Executive Order 11007, to study the possibilities of initiating such a standards program for selected classes of equipment such as (1) customer-provided PBX's and (2) automatic dialers and recording and answering devices.

DOCKET NO. 19528 PROCEEDINGS

12. On June 14, 1972, the Commission instituted this proceeding by Notice of Inquiry and Proposed Rule Making, 35 FCC 2d 539 (1972), to determine whether and under what terms, conditions, or limitations the interstate MTS and WATS tariffs should be revised to allow customers to have the option of furnishing any needed network control signaling units and connecting arrangements (or the functional equivalent thereof), and to determine what rules, if any, the Commission should adopt with respect to the foregoing. In addition, a Federal-State Joint Board was established pursuant to Section 410 of the Communications Act of 1934, as amended, to submit its recommendations to the Commission concerning this matter.

13. In our First Supplemental Notice in Docket No. 19528, 40 FCC 2d 315 (1973), we questioned whether, at that time, it was feasible from a technical, engineering,

operational and administrative viewpoint to establish an optional program in lieu of or in addition to the present tariff requirements for carrier-provided network control signalling units and connecting arrangements and requested comments concerning a number of reports and proposals. These reports and proposals include: (1) the report and recommendations of the PBX Standards Advisory Committee; (2) the proposal of the Office of the Chief Engineer of this Commission; and (3) the proposal of the National Association of Regulatory Utility Commissioners (NARUC) Staff Subcommittee Report on Communication Interconnection. In addition to these specific proposals, we also invited comments concerning other alternatives such as: (1) the Rochester Telephone Company's NPD program; (2) the establishment of standards by the carriers and the incorporation of such standards in tariffs or technical references with the carriers being responsible for the program's enforcement; and (3) leaving the tariffs unchanged but requiring the carriers to improve their services and applying the same practices to both carrier and customer-provided facilities. The Joint Board we convened in this matter has reviewed these comments and issued its Recommended First Report and Order which is presently before us for consideration.

14. The Joint Board has proposed that customer and carrier-provided ancillary and data terminal equipment be directly connected to the telecommunications network if it is registered with the Commission under a program similar to this Commission's existing type acceptance program for radio transmitting equipment. The proposed plan is to apply to all terminal equipment other than PBXs, key telephone systems, main telephones, extension telephones and coin telephones. Registration is to be based on representations and test data submitted by an applicant to the Commission. If the representations and test data concerning a particular device are found to comply with specific interface criteria and other requirements and the Commission determines

that it is in the public interest, convenience and necessity, such device would then be registered. The Joint Board proposal would require each device to have affixed to it installation, maintenance and operating instructions, and would allow connection of registered devices to the network to be accomplished through the use of standard plugs, jacks and other simple arrangements as provided in tariffs.

15. The California Public Utilities Commission in its General Order No. 138 has adopted rules permitting the direct attachment to the telecommunications network of customer-provided ancillary and data terminal equipment and of protective couplers where they have been certified by a registered electrical engineer qualified in the field of communications equipment. The program applies only to customer-provided equipment, not to carrier-provided equipment. Certification is based on the registered engineer's examination of the design and operating characteristics of the device, the manufacturer's quality control procedures, and the servicing. The test standards and enforcement procedures regarding these factors are not specified in the plan, but are left to the discretion of the registered engineer. After being granted a registration number, the manufacturer must keep records of his quality control procedures, and these records are to be examined annually by the certifying engineer. Further, manufacturers or vendors must offer a maintenance contract with all certified equipment.

16. We have given careful consideration to American Telephone and Telegraph Company's (AT&T) connecting arrangement program (AT&T Tariff F.C.C. No. 263, Sections 2.6.4(A) (1), (2) and (3); 2.64(B)(1); 2.64(D)(1)(a)),[8] AT&T's manufacturer attestation program for customer-provided headsets and non-powered conferencing equipment (Tariff 263, Section 2.64(E)),[8] AT&T's con-

[8] Similar tariff provisions appear in other sections of Tariff 263 (MTS) as well as Tariff 259 (WATS).

formance program (APCM program) for answering devices (Tariff 263, Section 2.6.4(F)),[6] the Rochester Telephone Company's NPD program (Tariff 263, Section 2.9), the reports of the National Academy of Sciences and Dittberner Associates, the various reports of the several advisory committees and subcommittees, the recommendations of the Federal-State Joint Board, the California registration program, and all the comments of the many parties who have participated throughout the various stages of the proceedings herein. In addition, we have noticed other reports and materials, and where such were used in arriving at our findings they are so noted. In the seven years which have elapsed since our *Carterfone* ruling, the carriers have been afforded ample opportunity to propose effective procedures and/or tariff conditions to prevent harm without unduly restricting a customer's basic right to make reasonable use of the facilities and services furnished by the carrier. This the carriers have failed to do (with the possible exception of non-powered conferencing devices, headsets and conforming answering devices). The evidence before this Commission amply demonstrates that many "special" entities (e.g., gas, oil, electric, and transportation companies, selected industrial firms, the Department of Defense, the National Aeronautics and Space Administration, and customers in "hazardous or inaccessible locations") have long been and continue to be allowed to connect their equipment and facilities directly to the telephone network by means less restrictive than carrier-provided connecting arrangements (Tariff 263, Sections 2.7.5, 2.7.6, 2.7.7 and 2.7.8) apparently without causing harm to the network. We also note that there has been no demonstration of network harm resulting from the interconnected operation of some 1600 independent local telephone companies and the Bell System (including small rural, municipal, and co-op systems)—many of whom purchase and connect without benefit of carrier-supplied connecting arrangements the identical independently manufactured terminal equipment for which the individual user must lease carrier-supplied connecting arrangements. Ac-

cordingly, in view of our findings in this proceeding concerning the mechanisms which can cause technical harm and effective means for preventing such harms, the Commission has now reached three separate and independent conclusions. First, the present tariff provisions requiring the use of carrier-supplied connecting arrangements impose an unnecessarily restrictive limitation on the customer's right to make reasonable use of the services and facilities furnished by the carriers. Second, they constitute an unjust and unreasonable discrimination both among users (or classes of users) and among suppliers of terminal equipment. Third, the standards and procedures prescribed herein for the registration with this Commission of protective circuitry and/or terminal equipment will provide the necessary minimal protection against network harm which has been specified in various carrier operating procedures and/or the recommendations of the Joint Board, the California PUC, the NAS and Dittberner studies, and the Commission's interconnect advisory committees, and will serve the public interest. Equipment containing the appropriate FCC registered protective circuitry, or FCC registered terminal equipment, may, following the effective date of this Order, be connected directly with the telephone network pursuant to the procedures set forth in these rules, without benefit of carrier-supplied connecting arrangements. Carriers may continue to provide such connecting arrangements, if registered, and may require their use for equipment not registered with the FCC or not used in conjunction with appropriate FCC registered protective circuitry. Except as herein provided, carriers may not require the use of such connecting arrangements or other interface devices or arrangements for FCC registered equipment or protective circuitry, and may not impose other tariff conditions contrary to the *Carterfone* policy without prior approval of the Commission.

THE FCC REGISTRATION PROGRAM

17. The program which we are adopting was designed with the goals of (1) protecting the public switched tele-

phone network from harms which might be caused by connection of terminal equipment to the network and (2) keeping the program as simple and easy to administer as is reasonably possible with a minimum of government intervention. Basically the program allows users to connect any terminal equipment to the telephone network if such equipment is connected through protective circuitry registered with the Commission or if such equipment is itself registered with the Commission. The option of registering only discrete protective circuitry rather than the entire terminal equipment will (1) eliminate unnecessary documentation relating to total system design and performance criteria. (Even for complex terminal equipment and/or systems, this option will require documentation relating only to the discrete protective circuitry.); (2) remove the need for filing proprietary information, thus eliminating the need to establish cumbersome procedures for handling such information; (3) allow users and manufacturers greater flexibility in satisfying the requirements of our registration program through the separate purchase of protective circuitry, if desired; and (4) enable us to administer our registration program with an absolute minimum of expense to both the government and private industry—to the benefit of the ultimate users—while at the same time protecting the public switched telephone network from harms which could be caused by the connection of faulty terminal equipment.

18. As noted above, the Federal-State Joint Board recommended that PBXs, key telephone systems, and main station, extension and coin telephones be excluded from the registration program at this time, thus requiring that these devices continue to be interconnected with the network via carrier-provided connecting arrangements. In this respect the Joint Board plan differed from that proposed in 1972 by the FCC's Office of the Chief Engineer, although the Joint Board largely adopted the Chief Engineer's proposal. Many parties have urged that some or all of these classes of

terminal equipment be included, and point to the Joint Board's failure to provide any basis for such proposed exclusion. While it did not explicitly so state, we believe the Joint Board's recommendation to defer inclusion of these devices was based primarily on technical concerns relating to the more complex network control signalling functions performed by some of these devices. In view of the clarification of network harms; the delineation of the roles, responsibilities and incentives of the various parties in protecting against these harms; and the registration standards and procedures contained herein, we believe that many if not all the technical concerns reflected in the Joint Board's exclusion of these equipment classes have been mooted. With this clarification, we are tentatively of the view that there is no valid distinction as to the potential for harm from any of the excluded classes of devices. However, since all parties may not have considered it necessary fully to address the inclusion of PBX's, key telephones, and main stations at this time, in view of the Joint Board's recommendation, we shall afford interested parties an opportunity to comment further on the inclusion of these classes of equipment. Accordingly, PBX's, key telephone systems, main station telephones, coin telephones, and equipment connected to party lines [7] will be excluded from the registration program established herein, pending further order of the Commission.[8]

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[7] Since we do not now have interconnection criteria for party line service, we will, in the meantime, allow customer-provided terminal equipment to be connected through carrier-provided connecting arrangements as is now done under presently effective tariffs. Coin telephones are excluded because, under present regulatory policies, only telephone carriers may provide coin telephone service.

[8] While the rules proposed by the Joint Board listed extension telephones in the equipment to be excluded from the registration program at this time, we conclude that extension telephones properly fall within the category of "ancillary" devices included in the Joint Board recommendation. The record supports our view that there is no valid technical dis-

19. Several of the parties to this proceeding have suggested that it would be inappropriate to adopt new policies concerning interconnection prior to collection and evaluation of the pertinent data filed in Docket No. 20003 concerning the economic effects of such interconnection. Recognizing that Docket No. 20003 constitutes a broad fact-finding investigation of the economic implications and interrelationships among a number of industry developments, policies, and practices—some instituted pursuant to regulatory policy, others carrier-initiated—we previously held that "the commencement of the notice of inquiry in Docket No. 20003 does not necessarily preclude further action in Docket No. 19528."[9] In short, the Docket No. 20003 inquiry is not to become a "dumping ground" for existing docketed proceedings. Consistent with *Carterfone, supra,* as well as the more recent decision in *Mebane,* 53 F.C.C. 2d 473 (1975), we will afford any carrier the opportunity to demonstrate the need to restrict specific instances or classes of interconnection on the grounds of economic harm, and will continue to examine the broad, long-term and interrelated implications of interconnection, jurisdictional separations, and rate structures in Docket No. 20003. The present decision relates only to the requirements which interconnected devices must satisfy in order to avoid technical harm to the telephone network. In view of our findings in paragraph 16 above, we believe that the public interest would be best

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tinction between extension telephones and other "ancillary" devices. Because the standards adopted herein are equally applicable to extension telephones and because inclusion of extension telephones does not represent a significant departure from the Joint Board's recommendations, we feel that the public interest is best served by the prompt inclusion of extension telephones within the scope of our registration program.

[9] *Economic Implications Relating To Customer Interconnection, Jurisdictional Separations, and Rate Structures,* Docket No. 20003, 49 F.C.C. 2d 1238, 1240 (1974).

served by the prompt implementation of our registration program.[10]

20. The carriers have argued that, as they have every incentive as well as the technical and operational means to maintain a high quality service, a registration program for carrier-supplied equipment is unnecessary, and may impose additional expenses on them which must ultimately be borne by the telephone user. We do not question the carriers' dedication to high quality service, nor their desire and ability to protect the network from any harms which might be caused by carrier-supplied equipment. However, we note that carrier-supplied terminal equipment possesses the same *potential* for harm to the network as does customer-supplied equipment—particularly in view of the fact that much carrier-supplied equipment is purchased from independent manufacturers who market identical equipment to the general public. We also expect that the information provided by the carriers in their registration applications will be of considerable aid to the Commission as a benchmark against which other applications may be judged. Furthermore, when one participant in a competitive market is subject to regulatory constraints (e.g. registration of equip-

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[10] Our *Carterfone* policy has permitted the public to utilize various types of equipment with the public communications network. It is our firm belief that public benefits have resulted from this policy. The purpose of Docket 19528 is not to revisit *Carterfone* but rather to review the present limitations imposed on the attachment of equipment to this network. Thus, issues relating to the potential overall economic impact of the *Carterfone* policy are beyond the scope of this proceeding. The potential economic consequences of *any* decision in this proceeding are minimal, since they affect only the differential costs and revenues associated with customer-provided vis-a-vis carrier-provided protective circuitry and procedures—not with the terminal device *per se*. In view of this we would expect that the parties in commenting on PBXs, key telephone systems, and main station telephones would limit their arguments to relevant matters and not to the basic policy decision enunciated in *Carterfone*.

ment) while another is not, there exists the possibility of using the registration, notification, and complaint standards and procedures for competitive advantage. In a related proceeding, the Courts have already commented on such a situation;[11] and the carriers themselves have made the same argument in similar circumstances. These countervailing considerations require a careful weighing to ascertain wherein the overall public interest rests. On balance, and particularly in view of the relatively straightforward and inexpensive registration program we envision, we believe the public interest will best be served by requiring the carrier-supplied terminal equipment be registered, and consistent with the Joint Board recommendation we shall so order. However, we plan to reexamine the situation within the first year of operation of this registration program to determine whether the public benefits of requiring registration of carrier-provided equipment continue to outweigh any costs resulting therefrom, and to rule accordingly.

Technical Requirements

21. The National Academy of Sciences, in its 1970 report to the Commission, identified four areas of potential "harm" which might arise as a consequence of permitting uncontrolled direct connection of equipment to the telephone network: (1) hazardous voltages, (2) excessive signal power levels, (3) excessive longitudinal imbalance, and (4) improper network control signaling. The National Academy of Sciences reported that the carrier-provided protective connecting arrangements protected against such "harms" within the boundaries of acceptableness regardless of the design of particular equipment connected thereto. Our program adopts a similar approach. We have specified the boundaries which may not be exceeded in each of hazardous voltage, signal power and longitudinal imbalance. Without requiring any particular circuit design to be employed, we have required that the design of registered terminal

[11] *Hush-A-Phone* v. *U.S.*, 238 F. 2d 266, 268-69 note 9 (D.C. Cir. 1956).

equipment and registered protective circuitry assure that these boundaries are not exceeded, and will continue not be be exceeded, under foreseable usage and mechanical and electrical stress. Registered protective circuitry is required to provide assurance of conformance to our interface requirements regardless of the particular equipment connected thereto and regardless of what failure modes such equipment may manifest. Registered terminal equipment is required to provide such assurance under all foreseeable failure modes of such registered terminal equipment and of equipment expected to be connected thereto. Such assurance may be provided either by incorporating protective circuitry in the registered terminal equipment, or, alternatively, by virtue of a design which precludes violation of the boundary constraints.

22. With the exception of on-hook impedance, we do not believe it is necessary to impose standards upon network control signaling. We are not persuaded that individual violations of criteria on compatible network control signaling will have any significant effect upon the telephone service of other telephone network users. Improper network control signaling will most directly affect the telephone service of the user of equipment which generates improper network control signals. A user thus has no incentive to generate improper network control signals, as he will only decrease the utility of his own telephone service by so doing (e.g. fail to receive telephone calls, be unable to generate telephone calls, or reach wrong numbers); thus we feel that any problems which may arise will be self-correcting. We would note that the present telephone company-provided connecting arrangements do not fully protect against improper network control signaling,[12] and that since such connecting arrangements were first offered in 1969, the carriers have not increased the level of protection against

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[12] *See* Docket No. 19419 Tr. 3980-85; 3987-93; 4328-29; 4546-50; 4552-54; 4561-65; 4969-73. Testimony of L. Hohmann. Tariff F.C.C. No. 263, § 2.6.3.

improper network control signaling provided by their connecting arrangements. From this we conclude that improper network control signaling has not been a significant problem to the carriers, and that the presently-effective approach of specifying proper network control signals in the tariffs, and in informational materials ("Technical References") distributed to equipment manufacturers has been effective, and has provided the requisite protection. We encourage the carriers to continue to provide informational materials to equipment manufacturers and others concerning network control signaling,[13] and commend the reports of our advisory committees on PBXs, telephone answering devices and telephone dialers to the attention of equipment manufacturers as one source of such information.

23. Should improper network control signaling proliferate on the telephone network, the point could be reached where telephone facilities which are shared among many network users (e.g. central office equipment, trunks, etc.) would be nonproductively engaged in reaching wrong numbers, and incompleted calls, etc., which would degrade the overall service quality. While we are convinced that such a situation will not arise, due to the self-correcting mechanisms previously noted, we would be receptive to amending our rules at any time to include evaluation of network control signaling functions of registered terminal equipment and registered protective circuitry, or to provide for manufacturer attestation of compatibility, should evidence to the contrary become available.

24. The technical requirements pertaining to registered terminal equipment and registered protective circuitry are contained in Subpart D of Part 68, and are explained in the following paragraphs. The term "reasonable application of

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[13] Section 68.110(a) imposes the requirement that the carriers supply compatibility information upon request; to the extent that such informational materials effect compliance with this rule, no additional action by the carriers will be necessary.

earth ground," which appears in several of the rules in Subpart D, deserves particular note. Because the connection of earth ground to registered terminal equipment and registered protective circuitry may cause noncompliance with several of the technical requirements, it is important that such registered terminal equipment and registered protective circuitry be properly insulated and isolated from any "reasonable application of earth ground." In evaluating equipment, the following guidelines should be followed:

a. For protective circuitry, "reasonable application of earth ground" shall include physical contact of all exposed surfaces of the circuitry with a conductor connected with earth ground, and of physical contact of each non-telephone line connection with a conductor connected with earth ground, and with all possible combinations thereof;

b. For terminal equipment, "reasonable application of earth ground" shall include all reasonably foreseeable possibilities whereby earth ground may become connected with such equipment, including the possibility of physical contact of all exposed surfaces with a conductor connected with earth ground, the possibility of connection with earth ground of each power-line connection, and the possibility of connection with earth ground through foreseeable connection with other equipment.[14]

25. *Environmental Stress Simulation.* Registered terminal equipment and registered protective circuitry will be subjected to various environmental conditions during shipment and usage, and accordingly we have required, in Section 68.302, that harm does not arise in registered equipment either prior to, or after the application of therein-specified stresses.

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[14] Foreseeable additional connection, must include all expected possibilities, such as accessory sockets (e.g. an earphone jack).

26. The specified requirements on vibration, temperature and humidity cycling are directly in accord with the requirements on such cycling presently effective for conferencing devices, and are similar to those employed for Authorized Protective Connecting Modules (APCMs) used with answering devices, both of which equipment classes are presently directly connected with telephone facilities.[15]

27. The specification of the metallic voltage surge parameter is derived from two presently-effective programs. The requirement imposed on conferencing devices is that a 1000 volt peak surge, having a 10 microsecond rise time to crest and a 1000 microsecond decay time to half crest be applied to the tip and ring telephone connections during the off-hook state.[16] The requirement applied to APCMs is defined in terms of a test circuit which applies similar surges.

28. Various specifications of the longitudinal voltage surge parameter were suggested to us. The requirement imposed on conferencing devices is that three 2500 volt peak surges of each polarity, having a 1.2 microsecond rise time to crest and a 50 microsecond decay time to half crest be applied between all telephone connections, connected together, and earth ground, under all reasonable conditions of connection of the terminal equipment with earth ground. The Joint Board recommended the use of such a surge only where external power is supplied to terminal equipment.[17] Our answering device committee recommended that such a specification be applied to power-line connections of that type of terminal equipment (and further recommended that testing be conducted in stages—first by pulsing at 500 volts,

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[15] Similar requirements are recommended in our advisory committee reports, and in such reports detailed instructions on specific implementing tests are contained.

[16] This specification was also contained in our advisory committee report on answering devices.

[17] Section 68.304(b) of the Recommended First Report and Order of the Federal-State Joint Board.

then 1500 volts and finally at 2500 volts). The similar specification for APCMs is defined in terms of a test circuit which charges a 0.1 microfarad capacitor to 2500 volts, and which then discharges that capacitor through a 60 microhenry coil (dc resistance less than 2.0 ohms) to the tip and ring connections of the terminal equipment, across which is connected a resistance of approximately 132 ohms. Such a circuit applies a longitudinal voltage surge of approximately 2 microseconds rise time to crest and 10 microseconds decay time to half crest to the APCM under two conditions of test: first, with the non-telephone connections grounded and the pulse applied to the telephone connections, and second, with the telephone connections grounded and the pulse applied to the non-telephone connections. In both tests, ground connections are made through a 14 microhenry coil, and the current through this coil is required to be less than 0.3 amperes, peak.

29. The purpose of stressing terminal equipment with longitudinal surges is to determine whether such equipment will continue to conform to our technical requirements if it is subjected to a voltage surge resulting from lightning. Since lightning may affect either an exposed telephone connection, or an exposed power connection to the terminal equipment, the APCM techniques of requiring testing by simulating a lightning caused voltage surge on both sets of connections has merit, and we have adopted this approach. Thus, our rule requires that 2500 volt peak surges of each polarity, having a 2 microsecond rise time to crest and a 50 microsecond decay time to half crest (formed as the worst-case combination of the APCM and other specifications) be applied *first* between the telephone connections and earth ground, under all possibilities of connection of the equipment with earth ground, and *second* between each power line connection and earth ground, and between each conductive surface on the exterior of the equipment and earth ground, with the telephone connections individually, and in combination, connected to earth ground.

30. *Leakage Current Limitations.* Registered terminal equipment and registered protective circuitry are required to be adequately insulated, to protect against telephone facilities becoming connected with power-line energy (hazardous voltages) and earth ground (longitudinal imbalance). While it is desirable to maintain perfect insulation between the telephone connections and power-line and/or ground, such insulation must be specified in terms of leakage current under the application of test voltages. We have had various specifications of such leakage current recommended to us.

31. The Joint Board recommended that 1500 volts, 60 Hertz, be applied to all possible combinations of interface leads, power leads, exposed conducting surfaces and common circuit ground and that the leakage current resulting therefrom be limited to 2.5 milliamperes, rms,[18] only in the case of equipment which is externally powered. California has required that leakage current in each of two test cases be limited to 2.5 milliamperes: (1) when 1500 volts is applied between telephone connections and power connections, and between power connections and exposed surfaces, and (2) when 1000 volts is applied between telephone connections and exposed surfaces.[19] In addition, California independently requires that power transformers have a voltage breakdown rating greater than 1500 volts between primary and secondary and between the transformer windings and (chassis) ground.[20]

32. The requirement on conferencing devices[21] is that leakage current from the telephone connections, strapped

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[18] Joint Board First Report and Order, Sections 68.304(c) and (d).

[19] California General Order No. 138, Section 5.4(c).

[20] *Ibid.*, Section 5.3(a).

[21] Section 6.3.2 of Bell System Voice Communications Technical Reference, PUB 45101, "Interface Specification 2001 (Non-Powered Conferencing Devices)", May 1973.

together, to exposed conductive surfaces (on the housing) and earth ground be less than 2.5 milliamperes under the application of 1000 volts, rms, 60 Hertz between the points under test (the specific test required is to gradually increase the test voltage from 0 to 1000 volts over a thirty second time period, apply the full 1000 volts for one minute, and then determine the leakage current after this 1½ minute time interval). The APCM specification separately tests the dielectric insulation on the APCM's internal isolating transformer, and the APCM's housing insulation. In the first case, 750 volts, rms, 60 Hertz is applied for sixty seconds between the telephone connections (connected together) and earth ground, with all non-telephone connections and conductive surfaces on the housing of the APCM also connected to earth ground, and the leakage current is required to not exceed 0.5 ma, rms. In the second case, 1500 volts, rms, 60 Hertz is applied for sixty seconds between the telephone and non-telephone connections (all connected together) and earth ground, with conductive surfaces on the housing of the APCM also connected to earth ground, and the leakage current is similarly required to not exceed 0.5 ma, rms.

33. Our answering device committee recommended two separate requirements: first, that leakage between the telephone connections (connected together) and power connections not exceed 2.5 ma, rms., under the application of 1500 volts, rms, 60 Hertz, and second, that leakage between the telephone connections and all exposed conductive surfaces on the housing of such terminal equipment not exceed 2.5 ma, rms, under the application of 1000 volts, rms, 60 Hertz. Finally, our dialer committee recommended a slightly modified version of the answering device committee's specification whereby leakage current is required to not exceed 2.5 ma, rms, first, between the telephone connections and earth ground, and second, between the power connections and earth ground, under the application of 1000 volts, rms, 60 Hertz and 1500 volts, rms, 60 Hertz, respectively. The

dialer committee also recommended that the 1500 volt test requirement be dispensed with for equipment not connected to an external source of power.

34. The only case of a leakage current specification lower than 2.5 ma, rms, having been employed has been the APCM specification. AT&T's use of the 2.5 ma, rms, specification for conferencing devices (which predates the answering device tariff exception), as well as the consistent use of this figure by our advisory committees and by the Joint Board and California, convinces us that 2.5 ma, rms, is a reasonable leakage current limit. As the Joint Board's requirement of determining leakage current under the application of 1500 volts, rms, for all possibilities of leakage current (power line to telephone connections, power line to exposed conductive surfaces, and telephone connections to exposed conductive surfaces) is inclusive of possible lower test voltages for some of these leakage current paths, we are adopting the Joint Board's uniform use of 1500 volts, rms, for evaluation, with the proviso that leakage current tests be performed on terminal equipment regardless of whether it is connected to an external power source.

35. *Hazardous Voltage Limitations.* Section 68.306 sets forth "fail safe" requirements on hazardous voltage. The stated limits are generally employed throughout the telephone industry as voltage limitations below which special protection of telephone craft personnel is not required. Equipment must be designed to avoid the application of voltages exceeding these limits under normal operation, since our other technical rules specify that permissible metalic ac voltages in normal operation, are defined by the signal power limitations (which are on the order of one volt, rms). The hazardous voltage limits are worst-case equipment failure limitations, and evaluation of equipment for compliance with these limits requires an analysis of all foreseeable failure modes of the registered terminal equipment or registered protective circuitry, and of equipment which is reasonably expected to be connected thereto. Sub-

section (b) of this rule defines what we expect to be a worst-case failure mode of equipment which might be connected with registered protective circuitry—the application of commercial power line voltage. We have chosen to require evaluation of the effects of applying 220 volts, rms, to protective circuitry in recognition of the usage of such power in data processing installations and commercial wiring, and in the belief that power sources which are reasonably expected to be available at locations where registered terminal equipment and registered protective circuitry will be employed will not exceed 220 volts, rms.

36. The specific limits which we have chosen conform to the recommendations of our PBX Advisory Committee and to AT&T's statements in a pending proceeding, Docket No. 19419, wherein AT&T stated the limits it employs for voltages permitted on its telephone plant. In Docket No. 19419, AT&T testified that the allowable voltage levels for continuous ac voltages are 70 volts, peak,[22] and for continuous dc voltages the limit is 135 volts to ground.[23] Our PBX Advisory Committee has recommended the following voltage limits between telephone conductors: 71 volts, peak ac, 135 volts, dc, 142 volts, peak for combined ac and dc; and the following voltage limits between a telephone connection and ground: 71 volts, ac, 135 volts, dc, 71 volts, peak for combined ac and dc. We have specified voltage limits which conform to both the PBX Advisory Committee's recommendation, and to AT&T's statement, as follows: between telephone conductors: 70 volts, peak ac, 135 volts, dc, 140 volts, peak for combined ac and dc; and between a telephone connection and ground: 70 volts, peak ac, 135 volts, dc, 70 volts, peak for combined ac and dc.

37. *Signal Power Limitations.* Signal power in the 300–3995 Hertz band is required to conform to two different

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[22] "Peak" voltage is intended to mean one-half the peak-to-peak amplitude excursion of an alternating voltage waveform.

[23] Bell Exhibit No. 5 in Docket No. 19419, testimony of L. Hohmann.

criteria: (1) the three second averaged power, measured at a customer's premises is required not to exceed 1.00 milliwatt, and (2) the three second averaged power measured at a telephone company central office is required not to exceed 12 decibels below 1.00 milliwatt.[24] The first of these specifications is constant for all installations, whereas the second is variable, as different local loop attenuations will permit equipment at the customer's premises to apply differing maximum signal power levels at the premises without violating the central office power level limitation.

38. In the case of voice usage of the telephone network, the telephone companies have chosen to employ physical protection within their connecting arrangements only against violations of the first criterion above, i.e. the 1.00 milliwatt limitation measured at the customer's premises.[25] Since there has been no evidence of problems arising from this telephone company practice, our rule follows this approach.

39. The telephone companies have argued that data equipment does not necessarily use telephone facilities in the same manner as does voice equipment; i.e. that data signals do not follow the statistical patterns of voice signals and tend to present constant amplitude tones. They also argue that data signals of excessive power have a higher potential for causing loss of communications privacy of other telephone network users than would voice signals of similar excessive power, and that data users have some incentive to violate the power level limitations in order

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[24] Tariff F.C.C. No. 263. Message Telecommunications Service, Section 2.6.4.

[25] This has been done on the theory that due to the statistical nature of human speech, and disincentive to violate maximum power level requirements when humans are speaking, prohibitory language concerning the remaining power limitation which is contained within the tariffs, and in informational material distributed to equipment manufacturers ("Technical References") provides adequate protection.

to lower their data error rates. Data equipment manufacturers have argued that there is no incentive for users to exceed the power level limitations as degradation to their data communications service may result, and that the telephone companies' suppositions have not been substantiated.[26] We are taking no position as to the validity of these arguments, as this is at issue in a pending proceeding, Docket No. 19419. We note, however, that the carrier's present data access arrangements provide assurance of compliance with both sets of power limitations, the 1.00 milliwatt customer's premises limitation and the 12 decibel lower central office power limitation. Pending the outcome of Docket No. 19419, and expressly subject to the ultimate findings and conclusions which may be reached therein, we are establishing rules for connection of data terminal equipment which maintain the *status quo*. Our rules accept AT&T's proposals for dealing with data equipment signal power levels, as a practical and reasonable means of providing such protection.

40. A data equipment manufacturer is given the option of either designing its terminal equipment, or protective circuitry, to assure that data signal power levels do not exceed a universal, fixed level of −4 dB with respect to one milliwatt, measurable at a simulation of the interface, or, if it wishes to optimize performance of equipment on each specific telephone line to which it may be connected, it has the option of designing terminal equipment, or protective circuitry, to assure that the data signal power level does not exceed the particular, unique level, which that telephone line permits without exceeding the −12 dB central office limitation. Again, following AT&T's proposal, we are adopting the requirement of using a design of such equipment or circuitry which is capable of responding to information which the carrier will provide as to the particular permitted signal power level for each telephone line to

[26] These arguments have been advanced both in this proceeding and in Docket No. 19419.

which the customer intends to connect data equipment. The carrier will determine the particular permitted power for each telephone line for which it receives notification that its customer intends to connect data equipment to a Programmable Data Jack, and will make appropriate connections in the Jack to communicate this information, automatically, to the data equipment, thereby removing the possibility of improper adjustment of the signal power. The specific evaluation required by Section 68.308(b)(2) assures that registered data terminal equipment, or registered data protective circuitry will appropriately respond to the information provided it by the Programmed Data Jack.

41. *Longitudinal Balance Limitations.* Section 68.310 sets forth minimum requirements on longitudinal balance. Longitudinal balance of terminal equipment depends upon the degree of balance of the impedance of the tip and ring connections of the terminal equipment to earth ground. Thus, evaluation of terminal equipment and protective circuitry designs for conformance to the longitudinal balance requirements must include consideration of all foreseeable possibilities of connection of such equipment and circuitry with earth ground.

42. We have received several different suggestions for an appropriate specification for longitudinal balance. The Joint Board and California recommended that each of the voltages on the two telephone connections (tip and ring) with respect to earth ground not differ by more than one percent, in the voice frequency band. Conferencing devices are required to maintain longitudinal balance, as given by the parameter we have defined in our "Definitions" section, greater than (120—20 $\log_{10}$ frequency) over the frequency range of 60 to 4000 Hertz, which is about 85 decibels at 60 Hertz and 48 decibels at 4000 Hertz.[27] Our answering devices advisory committee recommended that this same

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[27] Section 6.3.5. of Bell System Voice Communications Technical Reference, PUB 45101, "Interface Specification 2001 (Non-Powered Conferencing Devices)", May 1973.

balance parameter exceed 40 decibels over the 60 to 4000 Hertz frequency range, and specified a particular test circuit for determining balance in accordance with this parameter. Our PBX advisory committee also recommended a minimum balance of 40 decibels over the 300 to 3400 Hertz frequency range.

43. We are rejecting the specification advanced by the Joint Board which is ambiguous. This specification is stated in terms of percentage, without stating the base on which such percentage is to be computed. Proper design of equipment intended for connection to the switched telephone network requires that essentially no longitudinal voltage be applied by terminal equipment at the interface. The ambiguous specification employed by the Joint Board will not necessarily insure this.

44. The longitudinal balance parameter which we have defined has been used by our advisory committees, and by the telephone companies in setting requirements on conferencing devices. We have also defined the balance parameter in terms of a particular test circuit which may be applied to terminal equipment to further remove ambiguity. This test circuit was advanced by our answering device advisory committee in its report.[28] In our view, the answering device advisory committee's requirement of testing longitudinal balance with an applied longitudinal voltage of 12.5 volts, rms (that is, by applying equal voltages of 25 volts, rms, to tip and ring) is sound, as semiconductors which only enter the "active" state on the application of a sufficiently high test voltage will thereby be activated. The remainder of the advisory committee's test circuit flows from the definition of the balance parameter. Finally, we have adopted the balance requirement which the telephone companies have required of conferencing devices. Such devices are presently exempt from the general tariff re-

[28] *See* Section 5.10 of the Advisory Committee Report on Answering Devices, May 21, 1973.

quirement of connection solely through a protective connecting arrangement which prevents longitudinal imbalance from affecting a telephone line. The telephone companies' requirement on conferencing devices is a clear and unambiguous statement by them of what they consider acceptable. Thus, the longitudinal balance is required to exceed (120—20 $\log_{10}$ frequency) at all frequencies in the band 60 to 4000 Hertz.

45. *On-hook Impedance Limitations.* As previously noted, we are persuaded that protection against improper network control signaling is not generally required. However, there is a need to impose conditions on one aspect of network control signaling—the on-hook impedance. If a telephone call is made to a telephone line to which an excessively low impedance is connected, or to a telephone line which causes excessive dc current to flow during the application of a ringing signal, the called party's central office will immediately cause the ringing signal to cease. The calling party will hear no audible ringing tone (a "ringback" tone) and will assume that the call did not go through.[29] We are persuaded by the carriers' arguments that after several repeated tries to complete such a call, the caller will usually involve telephone company repair personnel. To prevent this non-productive use of telephone facilities, we are requiring assurance that on-hook impedances (the impedances presented to a ringing signal) are adequately controlled.

46. However, the particular permitted on-hook impedance on any given telephone line is variable, and depends upon such factors as the length of the line, the type of central office, and the electrical characteristics of the line (and in the case of PBX trunk connections, may depend on whether or not double-speed dialing is to be used). Normal telephone lines may be connected with one to five paralleled standard

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[29] *See* Bell Ex. 5 and Tr. 4004-05 in Docket No. 19419 for discussion of "pretrip" and "false trip" and the expected effects thereof.

telephone ringers, depending upon these factors. The telephone companies have dealt with this requirement by rating each telephone line for the maximum number of "ringing bridges", or paralleled standard ringing impedances, through the use of tables which account for the factors involved in such a determination.[30] When a telephone company customer requests that additional equipment be provided by the telephone company (including equipment such as a connecting arrangement), the telephone company determines whether the addition of such equipment will exceed the "ringing bridge" limitation on the customer's telephone line.

47. We have established a similar mechanism for all terminal equipment. Section 68.312(b) requires that a determination be made as to the equivalent number of standard telephone ringers (the Ringer Equivalence Number), which one unit of registered terminal equipment or registered protective circuitry represents.[31] The customer merely

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[30] Section 812-015-170 of the Bell System Practices, AT&T Company Standard, Issue 2, June 1972 "Ringing Ranges and Ringing Bridge Limitations for Lines in Dial Offices"; Section 471-100-040 of the General System Practices, GT&E Standard, Issue 1, January 1968 "Line Leakage and Ringing Bridge Limitations". Official notice of both of these documents is hereby taken.

[31] Figure 1 of Section 68.216(a) of the Joint Board's Recommended First Report and Order is an incorrect (and ambiguous) graph of a standard ringing impedance. This graph was first published by our answering devices advisory committee in its draft and final reports on requirements for such devices during 1973, and was (apparently) reproduced by the Joint Board. AT&T and GTE both maintained at the time of publication of the answering devices report, and in their comments on the Joint Board Report that the curve was incorrect, but until we informally requested that a correct curve be furnished, no such curve was supplied. In furnishing a corrected curve, AT&T and GTE indicated that in order to provide such information, they recently ran laboratory tests specifically to derive the correct curve.

adds the number of ringers which are connected to a telephone line to the Ringer Equivalency Number which will appear on the label[32] of registered terminal equipment or registered protective circuitry which he may wish to connect. The sum must not exceed the "ringing bridge" maximum which the telephone company specifies for his particular line. This technique imposes no additional record-keeping requirements on the telephone companies as it follows their already-established practices. At the same time, it provides some added flexibility to equipment manufacturers, as they are not limited to using the *same* impedances as the telephone companies' telephone sets now use—they may use higher impedances and thereby permit more equipment to be connected to a customer's telephone line.

48. Our specific test requirements are drawn from the telephone companies' submitted ringer impedance curves and from comments of the telephone companies on the answering device advisory committee's report. Since the telephone companies have provided us with magnitude-impedance versus frequency curves which were obtained through the use of a 10 volt, rms, test oscillator, we have similarly required that determinations of magnitude-impedance be made using a 10 volt source. The advisory committee report specified 1.5 ma as the maximum permitted dc current to be drawn by a ringing impedance during the application of a simulated ringing signal, and we have adopted this specification. As General Telephone and Electronics had commented that their central offices use ringing signals in the frequency range of 16⅔ to 66⅔ Hertz, and ringing voltages that might be as high as 75 volts dc superimposed on 100 volts, rms, we have adopted these parameters as an inclusive specification which is slightly more stringent than AT&T's use of 20 or 30 Hertz ringing signals at slightly lower voltages.

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[32] Section 68.300(a) of our rules requires that the Ringer Equivalency Number, determined in accordance with Section 68.312, be displayed on the equipment label.

Standard Plug and Jacks

49. Section 68.104 requires that, except for telephone company-provided ringers, all terminal equipment be connected to the telephone network through standard plugs and jacks. Telephone company-provided ringers are excepted so as to permit a customer to have a permanently connected ringer not subject to accidental disconnection. The general requirement for standard plugs and jacks is based on the assumption that any user will be able to plug in terminal equipment without special installation instructions or training. By imposing this requirement, we believe it is unnecessary to impose special requirements pertaining to installation of registered equipment.[33] We have purposefully declined to prescribe specific standard plugs and jacks, including a Programmed Data Jack design, in the belief that acceptable designs will be voluntarily arrived at by cooperative action between the carriers and the terminal equipment industry.

If jointly sponsored designs for standard plugs and jacks are not expeditiously arrived at, we will prescribe specific designs. We will require that any entity be permitted to manufacture and supply standard plugs for use with registered terminal equipment and registered protective circuitry, without being subject to licensing by a telephone company and without any other telephone company-imposed restrictions.

Notification to Telephone Company

50. We have included a requirement that any customer desiring to connect terminal equipment to the telephone network must give notice to the telephone company. This will allow the telephone company to keep complete and accurate records of all equipment connected to each tele-

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[33] We note that this approach has already been adopted by the telephone carriers' attestation program for headsets and non-powered conferencing devices, by their conformance program for answering devices, and by their long standing practice of providing portable extension telephones.

phone line, and will aid in the performance of both routine maintenance and repairs. It will also enable the telephone companies to have at their disposal certain statistical information regarding interconnection (which may at a future date be required to be furnished this Commission). Since the notification to the telephone company includes the F.C.C. Registration Number, this information will enable the telephone company to identify all customers using a particular type of registered equipment, if it should become necessary to notify such customers, in special circumstances such as revocation of an equipment registration number. Furthermore, since the notification also includes the Ringer Equivalence Number, the telephone company will be able to inform its customers as to whether such registered equipment may be connected to the telephone line without exceeding the ringing bridge limitation (maximum number of ringers which may be connected) for that telephone line.

Incidence of Harm

51. Although our rules are designed to assure that no harm from terminal equipment will ever reach the telephone network, Section 68.108 gives the telephone company the right to temporarily discontinue a customer's service, should any harm to the telephone network be caused by such customer's terminal equipment. Assuming full compliance with all the rules and regulations in Part 68, we would expect that no such temporary discontinuances would occur; however, out of extreme caution, we believe that the telephone company should have the option available to it of temporarily discontinuing a customer's service, should the facts of a given situation clearly warrant such extreme action. If a complaint is brought against the telephone company as a result of a temporary discontinuance, the telephone company will have the burden of proving that such action was reasonable.

Repair of Equipment

52. Section 68.216 sets forth our requirements on the repair of registered terminal equipment and registered pro-

tective circuitry.[34] In order to maintain the level of assurance accorded by the design and manufacture of such equipment, repairs must be performed by the manufacturer or assembler of such equipment or by their authorized agent. However, we will allow routine repairs, such as fuse replacement, the changing of a pilot lamp, etc., to be performed by users, where the manufacturer or assembler satisfactorily demonstrates that the performance of such routine repairs will not result in a violation of the requirements of Subpart D of our rules. This limited exception, however, is to be construed narrowly, as we do not wish it to open the door to uncontrolled maintenance activities which may have some effect upon compliance with our technical requirements.[35]

Registration Procedures

53. Subpart C of the rules contains all the rules governing the procedures to be followed in registering terminal equipment and protective circuitry. These rules have been designed to insure that the Commission retains complete control over the registration program, while at the same time the required interaction between industry and the Commission is reduced to a minimum. We have accomplished this by adopting a plan whereby equipment sought to be registered is to be tested by the manufacturer or assembler rather than the government with the test results submitted along with the application for registration. While we do not expect that the administration of this program will routinely entail physical examination and/or testing

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[34] Section 68.216 is in no way intended to limit a user's ability to repair any parts in terminal equipment other than registered protective circuitry.

[35] We would note that where registered protective circuitry is fabricated on a plug-in subassembly in such manner that by no foreseeable failure to properly insert or remove such a subassembly, can a violation of the requirements of Subpart D of these rules occur, then we would consider the limited exception to this rule as applicable if the user "repairs" failed registered protective circuitry by plug-in replacement.

of terminal equipment or protective circuitry, the Commission specifically reserves the right to do so upon complaint or upon its own motion. We feel that this approach is simple and efficient from a regulatory point of view and will entail a minimum of administrative and other expense.

54. While we have provided that applications for registration will be placed on public notice, we wish to stress that we will not permit this procedure to become a means for delaying registration grants. All comments must be supported by relevant data and address the capability of the equipment or circuitry to comply with the technical requirements of Subpart D. Comments addressing other issues will not be entertained. In setting forth the rules relating to registration procedures, we have not specified the particular form an application should take nor have we indicated appropriate fees for registration. These, and other procedural matters will be addressed in future orders prior to the effective date of these rules.

CONCLUSION

55. We conclude that the Federal registration program described above and set out in the appendix hereto will provide the necessary protection for the telephone network from harms caused by the connection of terminal equipment thereto, and that adoption of this program will serve the public interest. In view of the action we are taking herein, i.e., adoption of a Federal registration program applicable to all classes of terminal equipment, we have further concluded that the proceedings in Docket No. 19528 should be terminated. However, as the registration program established herein is new, we believe it should be subject to continuing review and modification, if necessary, as actual experience under the program warrants. Accordingly, the Commission will continue to confer, as appropriate, with state commissions concerning those interconnection matters over which the state commissions and this Commission have jurisdiction.

ORDER

56. In view of the foregoing, IT IS HEREBY ORDERED, pursuant to Sections 4(i), 4(j), 201–205, 208, 215, 218, 313, 314, 403, 404, 410 and 602 of the Communications Act that the Commission's Rules and Regulations are amended by adding a new Part 68 as shown in the appendix hereto, effective April 1, 1976.[36]

57. IT IS FURTHER ORDERED That the pleadings mentioned in paragraph 4 above are DENIED and the pleadings mentioned in paragraph 5 above are DISMISSED.

58. IT IS FURTHER ORDERED That interested parties may file comments not later than December 11, 1975, directed to the planned inclusion of PBXs, key telephone systems and main station telephones in our registration program.

59. IT IS FURTHER ORDERED That AT&T revise its Tariffs F.C.C. Nos. 259 (WATS) and 263 (MTS), on not less than 60 days notice, in accordance with the requirements of this Report and Order, to be effective on the effective date of the rules in Part 68.

FEDERAL COMMUNICATIONS COMMISSION,
VINCENT J. MULLINS, *Secretary.*

The Commission's Rules and Regulations (Chapter I of Title 47 of the Code of Federal Regulations) are amended by the addition of a new Part 68 as follows:

PART 68.—CONNECTION OF TERMINAL EQUIPMENT TO THE TELEPHONE NETWORK

TABLE OF CONTENTS

SUBPART A—GENERAL

Section 68.1 Purpose.
Section 68.2 Scope.
Section 68.3 Definitions.

[36] Part 68 of the Commission's Rules and Regulations is not applicable to terminal equipment connected to the telephone network prior to the effective date of these rules.

SUBPART B—CONDITIONS ON USE OF TERMINAL EQUIPMENT

Section 68.100 General.
Section 68.102 Registration Requirement.
Section 68.104 Standard Plugs and Jacks.
Section 68.106 Notification to Telephone Company.
Section 68.108 Incidence of Harm.
Section 68.110 Compatibility of the Telephone Network and Terminal Equipment.

SUBPART C—REGISTRATION PROCEDURES

Section 68.200 Application for Equipment Registration.
Section 68.202 Public Notice.
Section 68.204 Comments and Replies.
Section 68.206 Grant of Application.
Section 68.208 Dismissal of Application.
Section 68.210 Denial of Application.
Section 68.212 Assignment of Equipment Registration.
Section 68.214 Changes in Registered Terminal Equipment and Registered Protective Circuitry.
Section 68.216 Repair of Registered Terminal Equipment and Registered Protective Circuitry.
Section 68.218 Responsibility of Grantee of Equipment Registration.

SUBPART D—CONDITIONS FOR REGISTRATION

Section 68.300 Labelling Requirements.
Section 68.302 Environment Simulation.
Section 68.304 Leakage Current Limitations.
Section 68.306 Hazardous Voltage Limitations.
Section 68.308 Signal Power Limitations.
Section 68.310 Longitudinal Balance Limitations.
Section 68.312 On-hook Impedance Limitations.
Section 68.314 Minimum Call Duration Requirements.

SUBPART E—COMPLAINT PROCEDURES

Section 68.400 Content.
Section 68.402 Amended Complaints.
Section 68.404 Number of Copies.

Section 68.406 Service.
Section 68.408 Answers to Complaints and Amended Complaints.
Section 68.410 Replies to Answers or Amended Answers.
Section 68.412. Defective Pleadings.

Part 68.—Connection of Terminal Equipment to the Telephone Network

SUBPART A—GENERAL

Section 68.1 *Purpose.*

The purpose of the rules and regulations in this Part is to provide for uniform standards for the protection of the telephone network from harms caused by the connection of terminal equipment thereto.

Section 68.2 *Scope.*

The rules and regulations in this Part apply to the direct connection of all terminal equipment other than coin telephones to the telephone network after the effective date of these rules, for use in conjunction with all services other than party line service. Terminal equipment as used in this Part includes terminal equipment and/or systems. *Note:* Pending further proceedings, the rules and regulations in this Part do not apply to PBXs, key telephone systems, or main station telephones.

Section 68.3 *Definitions.*

As used in this part:

Direct Connection: Connection of terminal equipment to the telephone network by means other than acoustic and/or inductive coupling.

Harm: Electrical hazards to telephone company personnel, damage to telephone company equipment, malfunction of telephone company billing equipment, and degradation of service to persons other than the user

of the subject terminal equipment, his calling or called party.

Interface: The point of interconnection between terminal equipment and telephone company communication facilities.

Longitudinal Balance: The ratio of the absolute value of longitudinal voltage divided by metallic voltage in decibels (voltage) with the magnitudes of the longitudinal and metallic voltages obtained as follows:

(1) A longitudinal voltage of 12.5 volts, r.m.s. is impressed;

(2) No metallic voltage is impressed; and

(3) The metallic voltage resulting from imbalance of the equipment is determined over a sufficient number of permutations of frequency and simulated loop current to specify the longitudinal balance of the equipment under test over frequency and loop current.

(NOTE.—The first two requirements are met if means are employed by test equipment to impress equal voltages with respect to earth ground on tip and ring of 25 volts, r.m.s.)

Longitudinal Voltage: One half the sum of the potential difference between the tip connection and earth ground, and the ring connection and earth ground.

Loop Simulator Circuit: A circuit consisting of a current source, variable from 20 to 160 milliamperes d.c. in parallel with an impedance consisting of 900 ohms ±1% in series with 2.14 microfarads ±1%. Equipment connected to the loop simulator circuit shall be paralleled with this impedance, and tests shall be conducted over the full range of variation of the current source, both polarities, with sufficient time allowed for the 2.14 microfarad capacitor to charge to a steady-state condition.

Metallic Voltage: The potential difference between the tip and ring connections.

Registered Protective Circuitry: Separate, identifiable and discrete electrical circuitry designed to protect the telephone network from harm, which is registered in accordance with the rules and regulations in Subpart C of this Part.

Registered Terminal Equipment: Terminal equipment which is registered in accordance with the rules and regulations in Subpart C of this part.

Telephone Network: The public switched telephone network.

SUBPART B—CONDITIONS ON USE OF TERMINAL EQUIPMENT

Section 68.100 *General.*

Terminal equipment may be directly connected to the telephone network in accordance with the rules and regulations in Subpart B of this Part.

Section 68.102 *Registration Requirement.*

Terminal equipment must be registered in accordance with the rules and regulations in Subpart C of this Part, or connected through registered protective circuitry, which is registered in accordance with the rules and regulations in Subpart C of this Part.

Section 68.104 *Standard Plugs and Jacks.*

(a) General: Except for telephone company-provided ringers, all connections to the telephone network shall be made through standard plugs and standard telephone company-provided jacks, in such a manner as to allow for easy and immediate disconnection of the terminal equipment. Standard jacks shall be so arranged that, if the plug connected thereto is withdrawn, no interference to the operation of equipment at the customer's premises which remains connected to the telephone network, shall occur by reason of such withdrawal.

(b) Programmable Standard Plugs and Jacks: Where a customer desires to connect data equipment which has been registered in accordance with Section 68.308(b)(2), he shall notify the telephone company of each telephone line to which he intends to connect such equipment. The telephone company, after determining the attenuation of each such telephone line between the interface and the telephone company central office, will make such connections as are necessary in each Programmed Data Jack which it will install, so as to allow the maximum signal power delivered by such data equipment to the telephone company central office to reach but not exceed the maximum allowable signal power permitted at the telephone company central office.

Section 68.106 *Notification to Telephone Company.*

Customers connecting terminal equipment to the telephone network shall, before such connection is made, notify the telephone company that such connection is being made and shall provide to the telephone company the F.C.C. Registration Number and the Ringer Equivalence Number of the registered terminal equipment or registered protective circuitry.

Section 68.108 *Incidence of Harm.*

Should terminal equipment cause harm to the telephone network, the telephone company shall, where practicable, notify the customer that temporary discontinuance of service may be required; however, where prior notice is not practicable, the telephone company may temporarily discontinue service forthwith, if such action is reasonable in the circumstances. In case of such temporary discontinuance, the telephone company shall (1) promptly notify the customer of such temporary discontinuance, (2) afford the customer the opportunity to correct the situation which gave rise to the temporary discontinuance, and (3) inform the customer of his right to bring a complaint to the Commission pursuant to the procedures set out in Subpart E of this Part.

Section 68.110 *Compatibility of the Telephone Network and Terminal Equipment.*

(a) Availability of Interface Information: Technical information concerning interface parameters not specified in this Part, including the number of ringers which may be connected to a particular telephone line, which is needed to permit terminal equipment to operate in a manner compatible with telephone company communications facilities, shall be provided by the telephone company upon request.

(b) Changes in Telephone Company Facilities, Equipment, Operations or Procedures: The telephone company may make changes in its communications facilities, equipment, operations or procedures, where such action is reasonably required in the operation of its business and is not inconsistent with the rules and regulations in this Part. If such changes can be reasonably expected to render any customer's terminal equipment incompatible with telephone company communications facilities, or require modification or alteration of such terminal equipment, or otherwise materially affect its use or performance, the customer shall be given adequate notice in writing, to allow the customer an opportunity to maintain uninterrupted service.

SUBPART C—REGISTRATION PROCEDURES

Section 68.200 *Application for Equipment Registration.*

(a) An original and four copies of an application for registration of terminal equipment and protective circuitry shall be submitted to the Federal Communications Commission, Washington, D.C. 20554, and include the following information:

(1) Name of applicant;

(2) A statement whether applicant is the manufacturer or assembler of the equipment or a vendor or user other than the manufacturer or assembler (include the name of the manufacturer or assembler);

(3) A statement that the terminal equipment or protective circuitry complies with and will continue to comply with the rules and regulations in Subpart D of this Part, accompanied by such test results, description of test procedures, analyses, evaluations, quality control standards and quality assurance standards as are necessary to demonstrate that such terminal equipment or protective circuitry complies with and will continue to comply with all the rules and regulations in Subpart D of this Part.

(4) The instruction manual for the terminal equipment or protective circuitry, if such manual contains instructions for routine customer repairs, together with a statement certifying that such routine repairs will not result in noncompliance with the rules and regulations in Subpart D of this Part.

(b) Each application, including amendments thereto, shall be personally signed by the applicant if the applicant is an individual; by one of the partners if the applicant is a partnership; by an officer, if the applicant is a corporation; or by a member who is an officer, if the applicant is an unincorporated association.

Section 68.202 *Public Notice.*

(a) The Commission will issue public notices of the filing of applications for equipment registration and the grants thereof. No grant will issue before 20 days from the date of the public notice of the filing of the application.

(b) The Commission will maintain lists of equipment for which it has granted registration.

Section 68.204 *Comments and Replies.*

Comments may be filed as to any application for equipment registration within 20 days of the date of the public notice of its filing. Replies to such comments may be filed within 10 days of the date of filing of such comments. All

comments must be served on the applicant and all replies must be served on all parties filing comments.

Section 68.206 *Grant of Application.*

(a) The Commission will grant an application for equipment registration if it finds from an examination of such application and other matter which it may officially notice, that the equipment will comply with the rules and regulations in Subpart D of this Part, or that such grant will otherwise serve the public interest.

(b) Grants will be made in writing showing the effective date of the grant and any special condition(s) attaching to the grant.

(c) Equipment registration shall not attach to any equipment, nor shall any equipment registration be deemed effective, until the application has been granted.

Section 68.208 *Dismissal of Application.*

(a) An application which is not filed in accordance with the provisions of the Subpart will be dismissed unless accompanied by an appropriate request for waiver of the rules.

(b) Any application, upon written request, may be dismissed prior to a determination granting or denying the equipment registration requested.

(c) If an applicant is requested by the Commission to furnish any additional documents, information or equipment not specifically required by this Subpart, a failure to comply with the request within the time, if any, specified by the Commission will result in the dismissal of such application.

Section 68.210 *Denial of Application.*

If the Commission is unable to make the finding specified in Section 68.206 it will deny the application. Notification of the denial will include a statement of the reasons for the denial.

Section 68.212 *Assignment of Equipment Registration.*

Commission equipment registration may not be assigned, exchanged or in any other way transferred to another party, without prior written notice to the Commission.

Section 68.214 *Changes in Registered Terminal Equipment and Registered Protective Circuitry.*

No changes in registered terminal equipment and registered protective circuitry shall be made without prior written notice to the Commission. If such change in registered terminal equipment or registered protective circuitry results in any change in the information furnished the Commission pursuant to Section 68.200, the grantee shall submit a revised application for equipment registration in accordance with Section 68.200.

Section 68.216 *Repair of Registered Terminal Equipment and Registered Protective Circuitry.*

Repair of registered terminal equipment and registered protective circuitry shall be accomplished only by the manufacturer or assembler thereof or by their authorized agent; however, routine repairs may be performed by a user, in accordance with the instruction manual if the applicant certifies that such routine repairs will not result in noncompliance with the rules and regulations in Subpart D of this Part.

Section 68.218 *Responsibility of Grantee of Equipment Registration.*

In applying for a grant of an equipment registration, the grantee warrants that each unit of equipment marketed under such grant will comply with all the rules and regulations in Subpart D of this Part.

SUBPART D—CONDITIONS FOR REGISTRATION

Section 68.300 *Labelling Requirements.*

(a) Registered terminal equipment and registered protective circuitry shall have prominently displayed on an

outside surface the following information in the following format:

Complies With Part 68, FCC Rules
FCC Registration Number
Ringer Equivalence Number

(b) Registered terminal equipment and registered protective circuitry shall also have the following identifying information permanently affixed thereto:

(1) Grantee's name

(2) Model number, as specified in the registration application

(3) Serial number

Section 68.302 *Environment Simulation.*

Registered terminal equipment and registered protective circuitry shall comply with all the criteria contained in the rules and regulations in this Subpart, both prior to and after the application of each of the mechanical and electrical stresses specified in this section.

(a) Vibration: Sinusoidal vibrations of 5 Hz to 300 Hz at either a 2.5g acceleration or with a maximum displacement of 0.8 inches, whichever produces the smaller g-force for a given frequency, with a logarithmic sweep rate of ⅓ octave per minute from 5 Hz to 300 Hz and then back to 5 Hz.

(b) Temperature and Humidity: Cycling at any convenient rate through the following temperature and humidity conditions three times: 30 minutes at 150°F and 15 percent relative humidity, followed by 30 minutes at 90°F and 90 percent relative humidity, followed by 30 minutes at −40°F and any convenient humidity.

(c) Shock: If the weight of the unit in pounds plus ten times its volume in cubic feet is less than 20, dropping onto a cement support surface which is covered by a 1/16 inch

layer of vinyl tile, three times on each of its three axes from a height of 30 inches. Otherwise, lifting about a base surface edge until the base surface forms a 45-degree angle with the above support surface or the elevated edge attains a 4-inch height, whichever is less, and then releasing and allowing to rotate and drop to the support surface ten times for each base surface edge.

(d) Metallic Voltage Surge: Three 1000 volt peak surges of a metallic voltage (of each polarity) having a 10 microsecond rise time to crest and a 1000 microsecond decay time to half crest.

(e) Longitudinal Voltage Surge: Six 2500 volt peak surges (three of each polarity) having a 2 microsecond rise time to crest and a 50 microsecond decay time to half crest applied: (1) between all telephone connections connected together and earth ground, under all reasonable conditions of application of earth ground; and (2) between each power line connection and earth ground, and between all possible combinations of power line connections and earth ground, with the telephone connections connected singly and in combination with earth ground. *Note:* For purposes of Subsection (e)(2), an external connection to the protective circuitry or terminal equipment which may, under equipment failure, become connected with a power line shall be deemed a power line connection.

Section 68.304 *Leakage Current Limitations.*

Registered terminal equipment and registered protective circuitry assure that, if a voltage source is connected to any two of the three following points:

(1) all telephone connections, connected together

(2) all power connections, connected together

(3) all possible combinations of exposed conductive surfaces on the exterior of such equipment or circuitry.

and is gradually increased from zero to 1500 volts, rms, 60

Hertz over a thirty second time period, and then applied continuously for 1 minute, the current in the mesh formed by the voltage source and these points shall not exceed 2.5 milliamperes, rms, at any time during this 90 second time interval, under all reasonable applications of earth ground to such equipment or circuitry.

Section 68.306 *Hazardous Voltage Limitations.*

(a) Under no condition of failure of registered terminal equipment or registered protective circuitry, or of terminal equipment connected thereto, shall (1) the open circuit voltages between any two telephone connections exceed 70 volts peak a.c., 135 volts d.c. or 140 volts peak for combined a.c. and d.c. potentials, steady-state, or (2) the potential difference between any telephone connection and earth ground, under all reasonable conditions of application of earth ground to the registered terminal equipment or registered protective circuitry, or equipment connected thereto, exceed 70 volts peak, a.c., 135 volts d.c. or 70 volts peak for combined a.c. and d.c. potentials, steady-state.

(b) Registered protective circuitry shall conform to the requirements of subsection (a) when commercial 220 volts a.c., 60 Hertz power is connected between all combinations of terminal equipment connections and between each terminal equipment connection and earth ground, under all reasonable conditions of application of earth ground to such circuitry.

Section 68.308 *Signal Power Limitations.*

(a) General: Registered terminal equipment and registered protective circuitry shall assure that power, as averaged over any 3-second time interval, in the frequency range of 300-3995 Hertz, delivered to a loop simulator circuit, does not exceed 1.00 milliwatt.

(b) Data Equipment: For data applications, registered terminal equipment and registered protective circuitry shall assure that power, as averaged over any 3 second time

interval, in the frequency range of 300-3995 Hertz, delivered to a loop simulator circuit, does not exceed:

(1) .398 milliwatts (−4 dB with respect to 1 milliwatt) or

(2) a level set by means of connections in a Programmed Data Jack connected therewith, which level shall be programmed in each possible 1 dB step from −12 dB through 0 dB, with respect to 1 milliwatt.

(c) Additional Data Equipment Requirements: For data applications, registered terminal equipment and registered protective circuitry shall assure that when an incoming telephone call is answered through the use of ringing signal detection circuitry, the signal power, as delivered into a loop simulator circuit, shall be limited to −55 dB with respect to 1 milliwatt for no less than 2 seconds.

Section 68.310 *Longitudinal Balance Limitations.*

Registered terminal equipment and registered protective circuitry shall assure that, under all reasonable conditions of application of earth ground to the registered terminal equipment or registered protective circuitry or equipment connected thereto, the longitudinal balance, in the frequency range of 60–4000 Hertz. exceeds [120—20 $\log_{10}$ (frequency, Hertz)] decibels if the registered terminal equipment or registered protective circuitry is connected to a loop simulator circuit.

Section 68.312 *On-hook Impedance Limitations.*

(a) Registered terminal equipment and registered protective circuitry shall assure that:

(1) the d.c. resistance between tip and ring connections, and between each of the tip and ring connections and earth ground, under all reasonable applications of earth ground to the registered terminal equipment or registered protective circuitry or equipment connected thereto, shall be greater than 20 megohms if measured

with a current-limited 200 volt d.c. voltage source applied (both polarities) to each specified pair of points; and

(2) if a simulated ringing signal consisting of the sum of 75 volts d.c. and 100 volts a.c., r.m.s. in the frequency range of 16⅔ through 66⅔ Hertz is applied to the ringing detection terminals of registered terminal equipment or registered protective circuitry, no more than 1.5 milliamperes d.c. shall flow in the mesh formed by the ringing detection terminals and the simulated ringing signal.

(b) The impedance measurable across the ringing detection terminals of one or more units, connected in parallel, of the same registered terminal equipment or registered protective circuitry, under the application of a 10 volt r.m.s. sinusoidal voltage, shall exceed the impedance magnitude versus frequency curve, depicted in Figure 1, at each frequency depicted on that curve. The reciprocal of the maximum number of such units of the same registered terminal equipment or registered protective circuitry which may be connected in parallel, such that the measurable impedance exceeds the specified curve, is the Ringer Equivalence Number.

Section 68.314 *Minimum Call Duration Requirements.*

For data applications, registered terminal equipment and registered protective modules shall assure that an outgoing telephone call shall persist for at least 2 seconds after the call is answered.

[FIGURE 1 IS OMITTED IN THIS APPENDIX]

SUBPART E—COMPLAINT PROCEDURES

Section 68.400 *Content.*

A complaint shall be in writing and shall contain: (a) the name and address of the complainant, (b) the name (and address, if known) of the defendant against whom the com-

plaint is made, (c) a complete statement of the facts, including supporting data, where available, showing that such defendant did or omitted to do anything in contravention of Part 68 of the Commission's Rules, and (d) the relief sought.

Section 68.402 *Amended Complaints.*

An amended complaint setting forth transactions, occurrences or events which have happened since the filing of the original complaint and which relate to the original cause of action may be filed with the Commission.

Section 68.404 *Number of Copies.*

An original and two copies of all complaints and amended complaints shall be filed. An original and one copy of all other pleadings shall be filed.

Section 68.406 *Service.*

(a) The Commission will serve a copy of any complaint or amended complaint filed with it, together with a notice of the filing of the complaint. Such notice shall call upon the defendant to satisfy or answer the complaint in writing within the time specified in said notice of complaint.

(b) All subsequent pleadings and briefs shall be served by the filing party on all other parties to the proceeding in accordance with the requirements of Section 1.47. Proof of such service shall also be made in accordance with the requirements of said section.

Section 68.408 *Answers to Complaints and Amended Complaints.*

Any party upon whom a copy of a complaint or amended complaint is served under this subpart shall serve an answer within the time specified by the Commission in its notice of complaint. The answer shall advise the parties and the Commission fully and completely of the nature of the defense, and shall respond specifically to all material allegations of the complaint. In cases involving allegations of harm, the answer shall indicate what action has been taken

or is proposed to be taken to stop the occurrence of such harm, both in terms of future production and with reference to articles in the possession of distributors, sellers, and users. Collateral or immaterial issues shall be avoided in answers and every effort should be made to narrow the issues. Matters alleged as affirmative defenses shall be separately stated and numbered. Any defendant failing to file and serve an answer within the time and in the manner prescribed may be deemed in default.

Section 68.410 *Replies to Answers or Amended Answers.*

Within 10 days after service of an answer or an amended answer, a complainant may serve a reply which shall be responsive to matters contained in such answer or amended answer and shall not contain new matters. Failure to reply will not be deemed an admission of any allegation contained in such answer or amended answer.

Section 68.412 *Defective Pleadings.*

Any pleading filed in a complaint proceeding not in substantial conformity with the requirements of the applicable rules in this part may be dismissed.

CONCURRING STATEMENT OF COMMISSIONER BENJAMIN L. HOOKS

(In re Connection of Terminal Equipment to the Telephone Network)

As a member of the Federal-State Joint Board which has been working on interconnect problems for the past several years, I concur in the main with the program hereinabove devised as a plausible solution to the principal issue of physical harm to the existing network. While the program is no doubt imperfect, and experience is likely to expose deficiencies in operational aspects (*e.g.*, attribution of responsibility for malfunctions, assessment of service costs, enforcement against non-complying manufacturers, installers and maintenance suppliers, accreditation of testing

sources), the Commission, for better or worse, has made the fundamental judgment that terminal interconnection is in the public interest; and, thus, reasonable standards are mandatory to effect this policy.

In concurring, however, I fully reserve the arguments I made in *Mebane Home Telephone Company of North Carolina*[1] with respect to expansion of our interconnection program in advance of the outcome of our Docket 20003 proceeding which is examining the economic impact of our interconnect policies. I remain concerned about the loss of revenues to the telephone companies, particularly—as in *Mebane*—the small, rural systems and cannot help but ponder the manner in which such losses, if significant, will be offset.

I cannot, nevertheless, fully join my majority colleagues in the requirement that telephone companies also register all their equipment with the Commission prior to installation.[2] Although sympathetic to the need to ensure that the telcos do not clamor for higher protection standards from independent manufacturers than imposed on themselves and favor an approach that assures that required competition is as fair as possible, registration of the phone companies' own equipment is an unnecessary over-reaction.

The telephone companies, unlike the independent manufacturers, have an inherent incentive in protecting the network (*viz.*, reduction of maintenance and service, promotion of overall telephone usage); that is why we have never required equipment clearance in the past. To do so now merely because some protection from foreign attachments is necessary is regulatory overkill which cannot be supported by logic or experience. We have ways, short of

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[1] 53 FCC 2d 473 (1975) (Commissioner Hooks, dissenting).

[2] Aware that I was part of the Joint Board which included telco registration of equipment in its proposal, the responses thereto have convinced me that such a requirement is wasteful of relevant resources.

meaningless registration, to preclude possible anti-competitive practices. Our record, thus far, contains no such anti-competitive finding.

If, in the future, it appeared that the phone companies were abusing equipment clearance procedures for competitive advantage, we might impose such bureaucratic rigmarole as telco equipment registration as a last resort. We should not, however, impose such expenses on the public (through increased governmental and industry costs) at the outset.[3]

Accordingly, while I do not dissent to the program overall, the foregoing prevents my unqualified approval and I would have invited further comments on the telco registration aspect of our program because the issue is so unique.

CONCURRING STATEMENT OF COMMISSIONER GLEN O. ROBINSON

I believe that this is the proper time for the Commission to extend registration requirements to all terminal equipment, including PBX, key telephone and main station equipment and ancillary devices. Our information and under-

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[3] The requirement that over 1,800 independent (non-Bell) telephone companies register their own equipment (even if only by cross-reference) along with hundreds of unknown suppliers must mean an unnecessary proliferation of the bureaucracy, whose job it will be to review and issue *pro forma* registration acknowledgments to telcos which already do an adequate job of protecting their network. While I do not subscribe to wholesale de-regulation and have urged an increase in our common carrier manpower to better regulate giants like AT&T (*GTE Satellite Corp.*, 43 FCC 2d 1168, 1169 (1973) (Commissioner Hooks, concurring)). I would use our scarce resources for tasks far more vital than what augurs to be cosmetic "make-work." While it is imperative that we know and understand what standards the telephone companies consider satisfactory if we are to intelligently regulate interconnection and undoubtedly should have secured such in the process of Docket No. 19528, discrete telco registration seems to be plain old red tape. File a form and pay a fee; timeless government response in the Computer Age.

standing is at present sufficient to allow us to extend our registration program to all such equipment. The Commission apparently acknowledges that there is no valid distinction between devices required to be registered and devices to which the registration requirements do not apply, in terms of their potential for harming the switched network. However, because "all parties may not have considered it necessary to fully address the inclusion of PBX, key telephone and main stations" the Commission has decided to seek further comments on the inclusion of PBX, key telephone and main station equipment. I disagree with this decision.

The proposed registration of all such equipment was unmistakably included in the proposal originally advanced by the Chief Engineer. It was commented on by many parties. Every interested party has had, in ample measure, both fair notice and the fullest opportunity to comment on every aspect of this case, including the registration of PBX, key telephone and main station equipment. Moreover, I venture to guess that any attempt to distinguish between ancillary equipment and PBX, key telephone, and main station equipment on technical grounds[1] will prove to be futile. Futility may not stop the Commission, however, and in consequence, one must look for a host of new (and, needless to say, unnecessary) problems for us (or the courts) to resolve. First and foremost, what properly constitutes data and ancillary equipment? What rule can we prescribe that will distinguish between a data terminal with an auxiliary voice capability for coordination, and a voice terminal with an auxiliary data capability? How will the line be drawn between voice and data services? For a teaser on how difficult this definitional problem is now—leaving aside how impossibly difficult it will obviously become in the future—one need only consult the Bell product notice

[1] We can set aside economic considerations insofar as these are, as the Commission emphasizes, not properly embraced within this proceeding.

taken from *Communications News*, Nov. 1975, p. 85, set out in the margin.[2]

Consider the dilemma created by the existence of a customer-owned protective connecting module, that will have to be certified as able to protect the public switched network from all harms that can be generated by improper input signals. If a user were to connect a voice terminal to the network through such a protective module, there would be no occasion for us to require disconnection because there would be no risk of technical harms to the system; the module is supposed to protect (and we certify that it does in fact protect) against those very harms. The principle of allowing customer-owned equipment to be interconnected to the public switched network is well established. We should not, therefore, be telling the users: "No, you cannot interconnect your equipment through your module; instead, you must rent a connecting module from the carrier even though we know that your module will protect the network from all possible harms." Such a position is illogical formally; it is not consistent with our policy of promoting competition, and (beyond either of those objections) it is unwise on its own merits.

One final comment on the scope of our registration program. For the present, I concur in the Commission's deci-

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[2] **Telephone for Electronic Funds Transfer Functions.—The Transaction II telephone for credit-card authorization, check verification, and other electronic funds transfer functions is designed for use in systems not equipped with audio-response units as well as voice-response applications. The telephone features an 8-character visual display, hands-free operation, and the ability to operate both in a voice-only system and in a data-oriented system. The Transaction II telephone contains all of the features of the Transaction I telephone including optional green/yellow lamp operation using keyed answer tone reception. A data receiver which operates at 150, 110, or 75 b/s with frequency-shift keyed data is also featured. Use card or write *AT&T, 195 Broadway, New York, New York 10007*.**

sion to require registration of carrier-supplied equipment. However, because I believe that the carriers do have an incentive, not shared by the interconnect companies, to protect the network against "harms," I concur in this requirement on the understanding that earnings will not necessarily be subject to the same technical standards as would be appropriate for interconnect companies. Thus, in judging carrier equipment, I assume we will take account of the special position of the carriers as network service providers and not merely equipment providers.